



US006594355B1

(12) **United States Patent**  
**Deo et al.**

(10) **Patent No.: US 6,594,355 B1**  
(45) **Date of Patent: Jul. 15, 2003**

(54) **METHOD AND APPARATUS FOR PROVIDING REAL TIME EXECUTION OF SPECIFIC COMMUNICATIONS SERVICES IN AN INTELLIGENT NETWORK**

5,537,466 A 7/1996 Taylor et al. .... 379/221.11  
5,551,035 A 8/1996 Arnold et al. .... 709/315  
5,619,557 A 4/1997 Van Berkum .... 379/265.02

(List continued on next page.)

(75) Inventors: **Ajay P. Deo**, Lewisville, TX (US);  
**Kelvin R. Porter**, Dallas, TX (US);  
**Henry Wang**, Irvine, CA (US)

(73) Assignee: **WorldCom, Inc.**, Clinton, MS (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/420,669**

(22) Filed: **Oct. 19, 1999**

#### Related U.S. Application Data

(63) Continuation-in-part of application No. 09/128,937, filed on Aug. 5, 1998.

(60) Provisional application No. 60/104,890, filed on Oct. 20, 1998, and provisional application No. 60/061,173, filed on Oct. 6, 1997.

(51) Int. Cl.<sup>7</sup> ..... **H04M 7/00; G06F 9/44**

(52) U.S. Cl. .... **379/219; 379/221.08; 379/229; 709/315**

(58) Field of Search ..... **379/201.01-201.05, 379/207.02, 219, 220.01, 221.08-221.12, 229, 230; 709/315, 316, 317**

#### (56) References Cited

##### U.S. PATENT DOCUMENTS

4,713,806 A 12/1987 Oberlander ..... 370/358  
5,157,390 A 10/1992 Yoshie et al. .... 340/825.52  
5,323,452 A 6/1994 Dickman et al. .... 379/201.04  
5,335,268 A 8/1994 Kelly, Jr. et al. .... 379/112.05  
5,450,480 A 9/1995 Man et al. .... 379/201.03  
5,463,682 A 10/1995 Fisher et al. .... 379/201.04  
5,475,817 A 12/1995 Waldo et al. .... 709/316

#### FOREIGN PATENT DOCUMENTS

WO 95/23483 8/1995  
WO 96/13949 5/1996  
WO 96/20448 7/1996  
WO 98/09421 3/1998  
WO 00/23898 4/2000  
WO 00/24182 4/2000

#### OTHER PUBLICATIONS

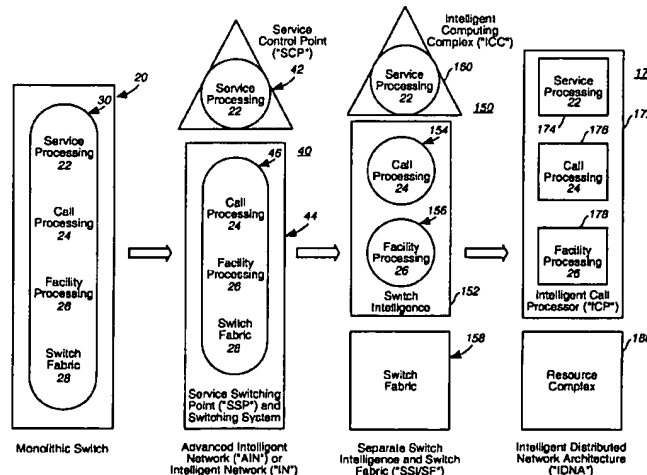
Stowe, M. "Service Management for the Advanced Intelligent Network" Countdown to the New Millennium. Phoenix, Dec. 2-5, 1991, Proceeding of the Global Telecommunications Conference, (Globecom), New York, IEEE, US, vol. 3, Dec. 2, 1991, pp. 1667-1671.

Primary Examiner—Benny Q. Tieu

#### (57) ABSTRACT

System and methodology for providing real-time call processing services received at a switch in an intelligent network having one or more service nodes having originating switches for receiving a call event. The system includes a platform-independent communication system for enabling communication between object instances executing at service nodes in the intelligent network. An operating system agent object instance executing in an execution environment associated with an originating switch communicates call origination information corresponding to a call event received at the switch to one or more object instances executing in an execution environment provided at a service node in the network; the object instances including a line object instance for maintaining the state of a communications line associated with a call origination, and, a service object implementing methods for performing a service according to a customer request.

32 Claims, 25 Drawing Sheets



## U.S. PATENT DOCUMENTS

5,644,629 A	7/1997	Chow .....	379/142.07	5,991,811 A	11/1999	Ueno et al. ....	709/231
5,664,102 A	9/1997	Faynberg .....	707/246	5,999,965 A	12/1999	Kelly .....	709/202
5,742,668 A	4/1998	Pepe et al. ....	455/415	6,014,700 A	1/2000	Bainbridge et al. ....	709/226
5,754,639 A	5/1998	Flockhart et al. ....	379/265.05	6,041,109 A	3/2000	Waller et al. ....	379/201.01
5,754,939 A	5/1998	Herz et al. ....	455/3.04	6,041,117 A	3/2000	Androski .....	379/268
5,774,668 A	6/1998	Choquier et al. ....	709/223	6,044,142 A	3/2000	Hammarstrom et al. ....	379/223
5,799,153 A	8/1998	Blau et al. ....	709/223	6,044,368 A	3/2000	Powers .....	707/2
5,825,865 A	10/1998	Oberlander et al. ...	379/211.02	6,085,030 A	7/2000	Whitehead et al. ....	709/203
5,825,869 A	10/1998	Brooks et al. ....	379/265.12	6,101,616 A	8/2000	Joubert et al. ....	714/11
5,826,268 A	10/1998	Shaefer et al. ....	709/9	6,122,510 A	9/2000	Granberg .....	455/433
5,828,747 A	10/1998	Fisher et al. ....	379/265.12	6,134,530 A	10/2000	Bunting et al. ....	705/7
5,838,970 A	11/1998	Thomas .....	709/316	6,182,109 B1	1/2001	Sharma et al. ....	709/104
5,867,498 A	2/1999	Gillman et al. ....	370/385	6,208,856 B1	3/2001	Jonsson .....	455/424
5,881,134 A	3/1999	Foster et al. ....	379/88.01	6,266,406 B1	7/2001	Mercouroff et al. ....	379/230
5,892,946 A	4/1999	Woster et al. ....	709/316	6,295,353 B1	9/2001	Flockhart et al. ....	379/265.02
5,898,839 A	4/1999	Berteau .....	709/227	6,321,323 B1 *	11/2001	Nugroho et al. ....	711/103
5,907,607 A	5/1999	Waters et al. ....	379/201.03	6,324,275 B1	11/2001	Yagel et al. ....	379/201.03
5,915,008 A	6/1999	Dulman .....	379/24.08	6,327,355 B1 *	12/2001	Britt .....	379/201.03
5,923,892 A *	7/1999	Levy .....	709/208	6,330,326 B1	12/2001	Whitt .....	379/265.13
5,940,616 A	8/1999	Wang .....	717/127	6,418,461 B1 *	7/2002	Barnhouse et al. ....	709/201
5,958,016 A	9/1999	Chang et al. ....	709/229	6,453,038 B1	9/2002	McFarlane et al. ....	379/265.05
5,966,434 A	10/1999	Schafer .....	379/201.01				

\* cited by examiner